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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

KARL J. WOOD ET AL

Serial No.: 10/077,062

Filed: FEBRUARY 15, 2002

Title: APPARATUS

Atty. Docket

PHGB 010035

Group Art Unit: 2613

Commissioner for Patents
Washington, D.C. 20231

LETTER TO OFFICIAL DRAFTSMAN

Sir:

Enclosed are (2) TWO sheets of formal drawings for filing in the above-identified application.

Respectfully submitted,

By _____
Gregory L. Thorne, Reg. 39,398
Senior Patent Counsel
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CERTIFICATE OF MAILING

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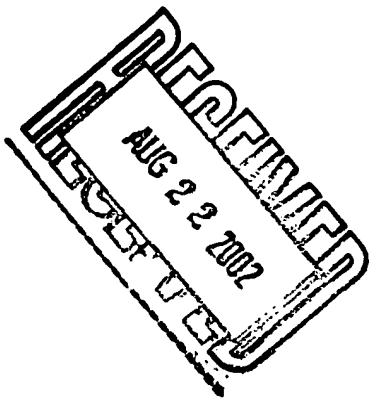
On August 6, 2002

By Noemi Chapa



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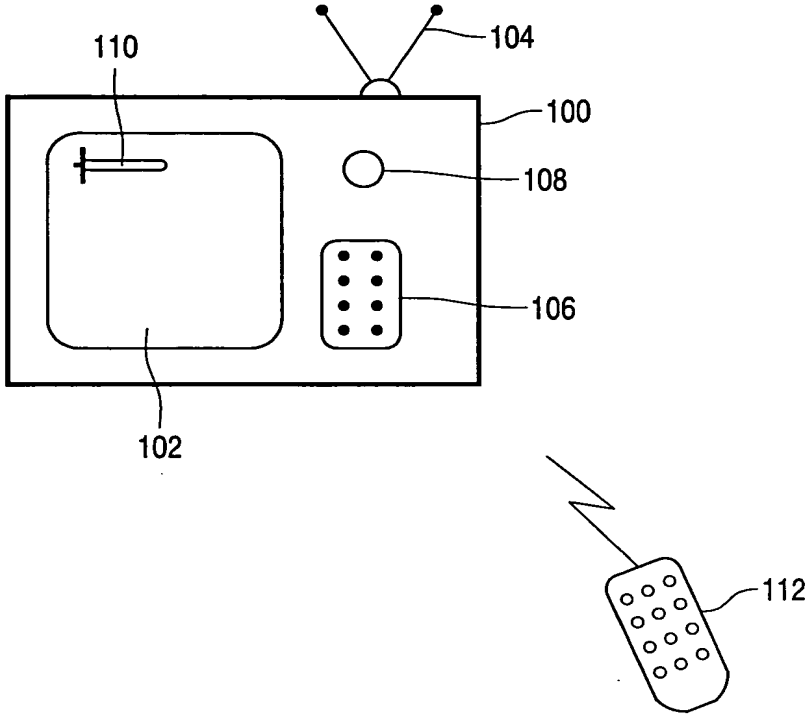


FIG. 1

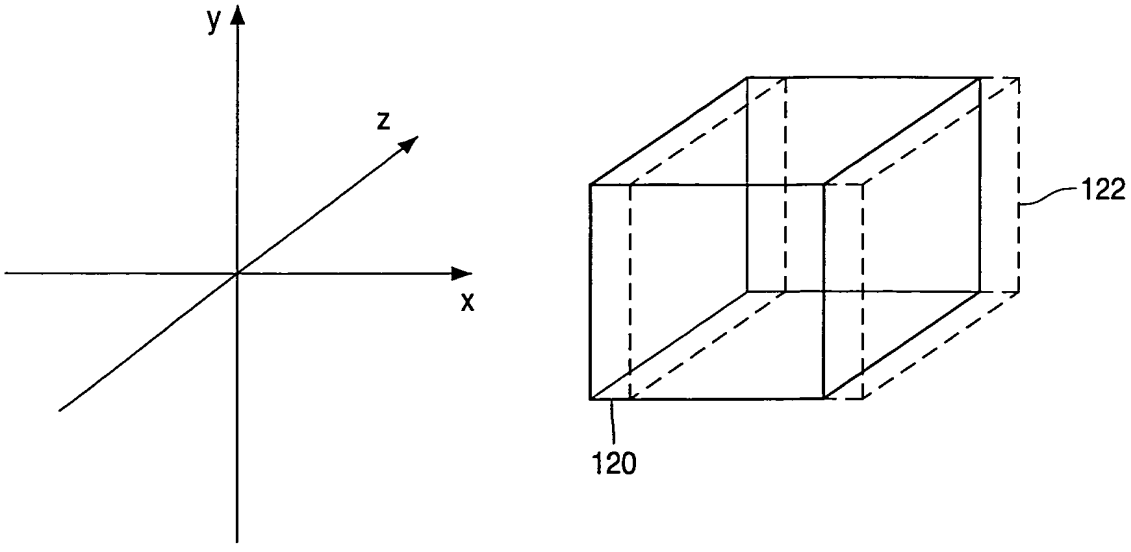


FIG. 2

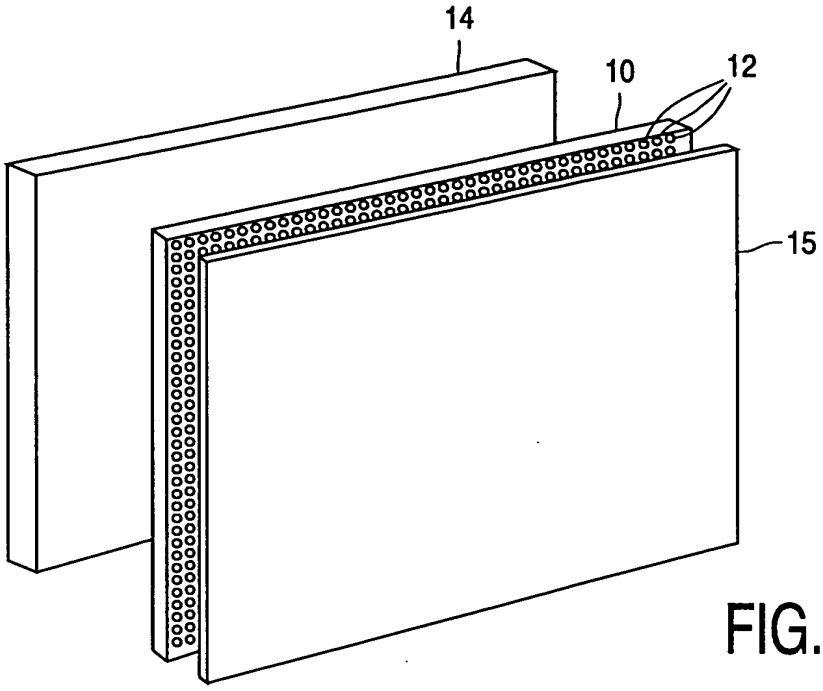


FIG. 3

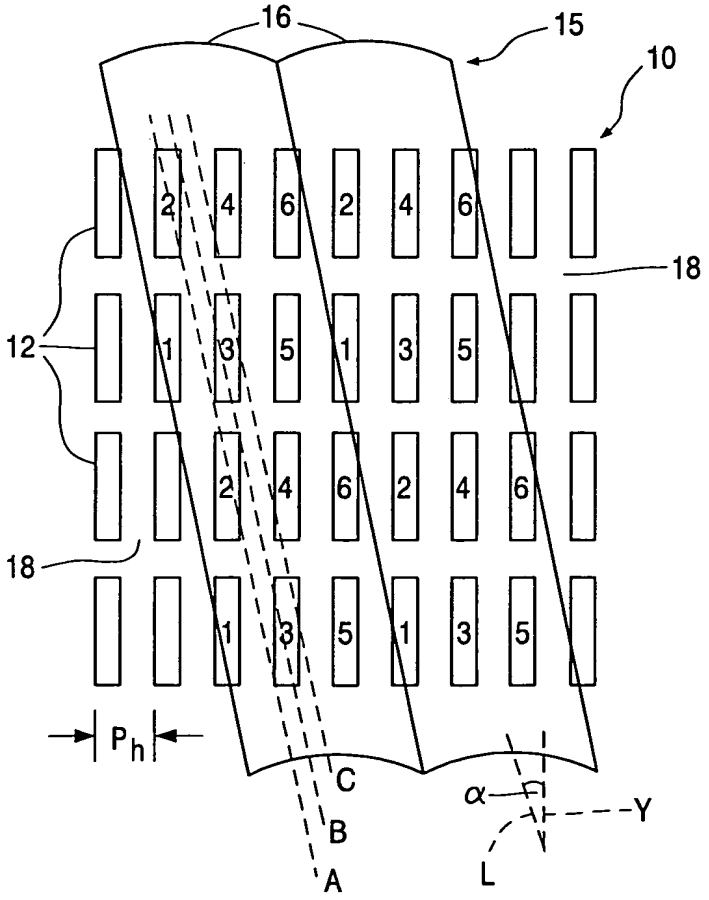


FIG. 4

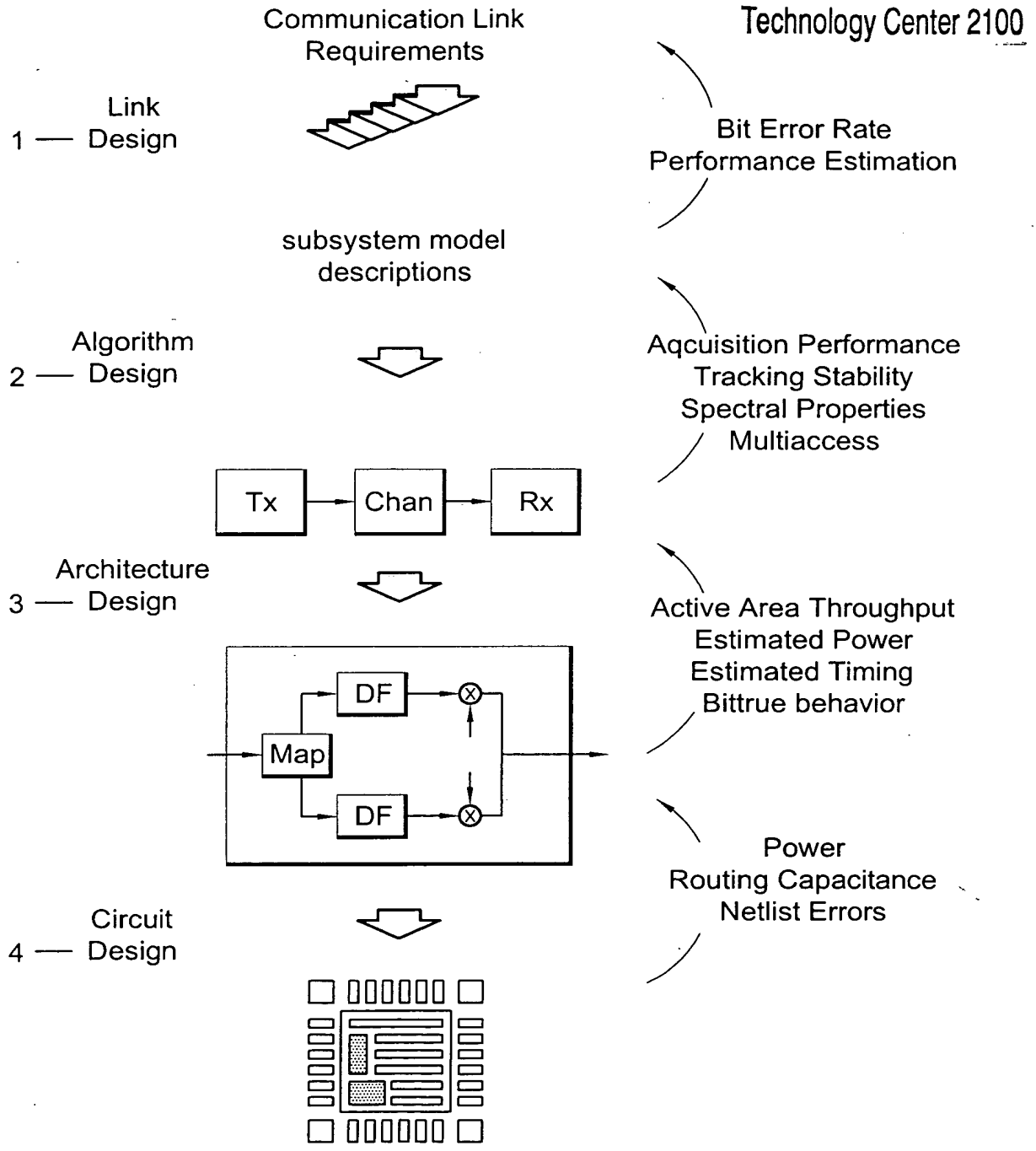


FIG. 1A

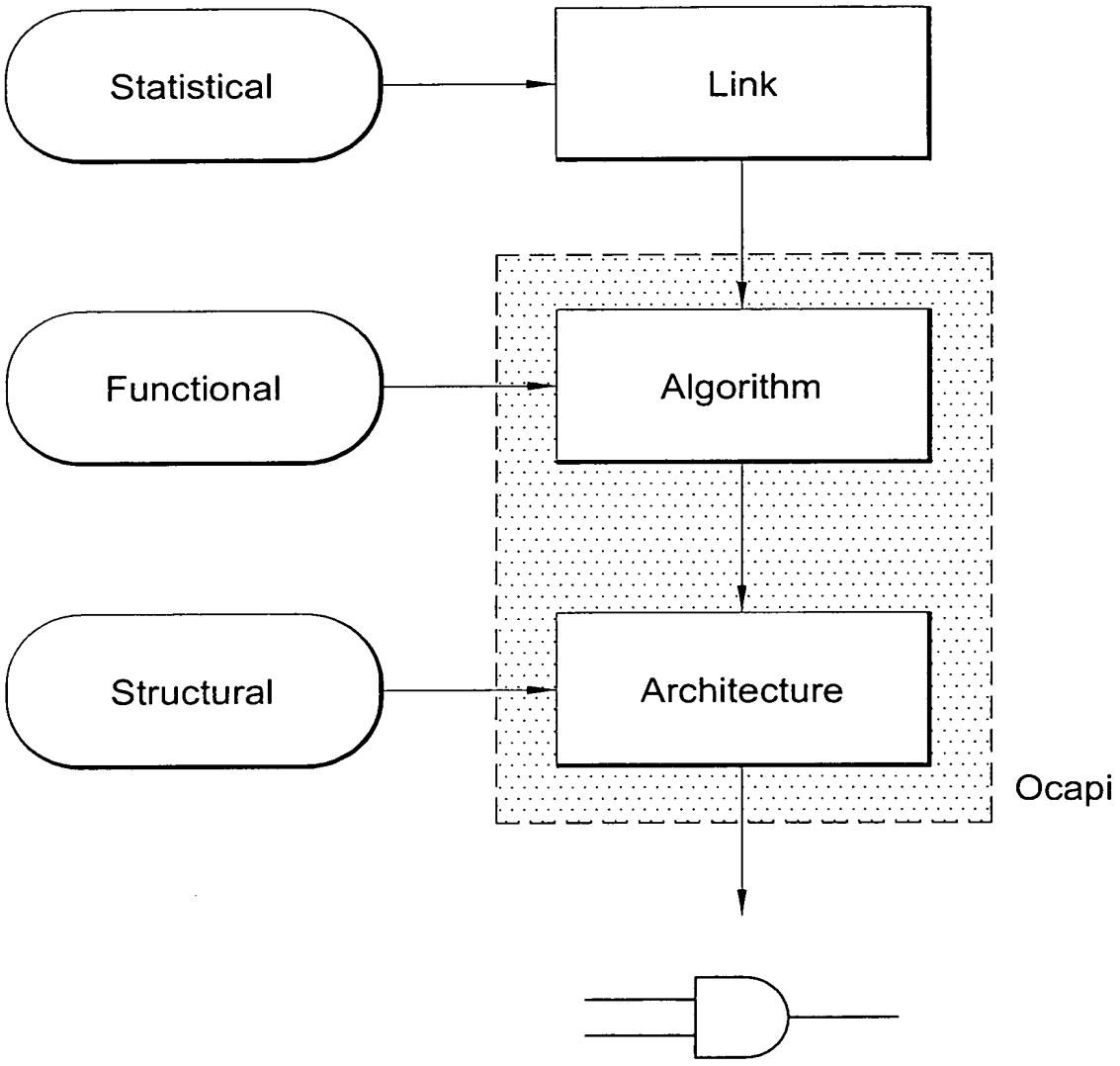


FIG. 1B

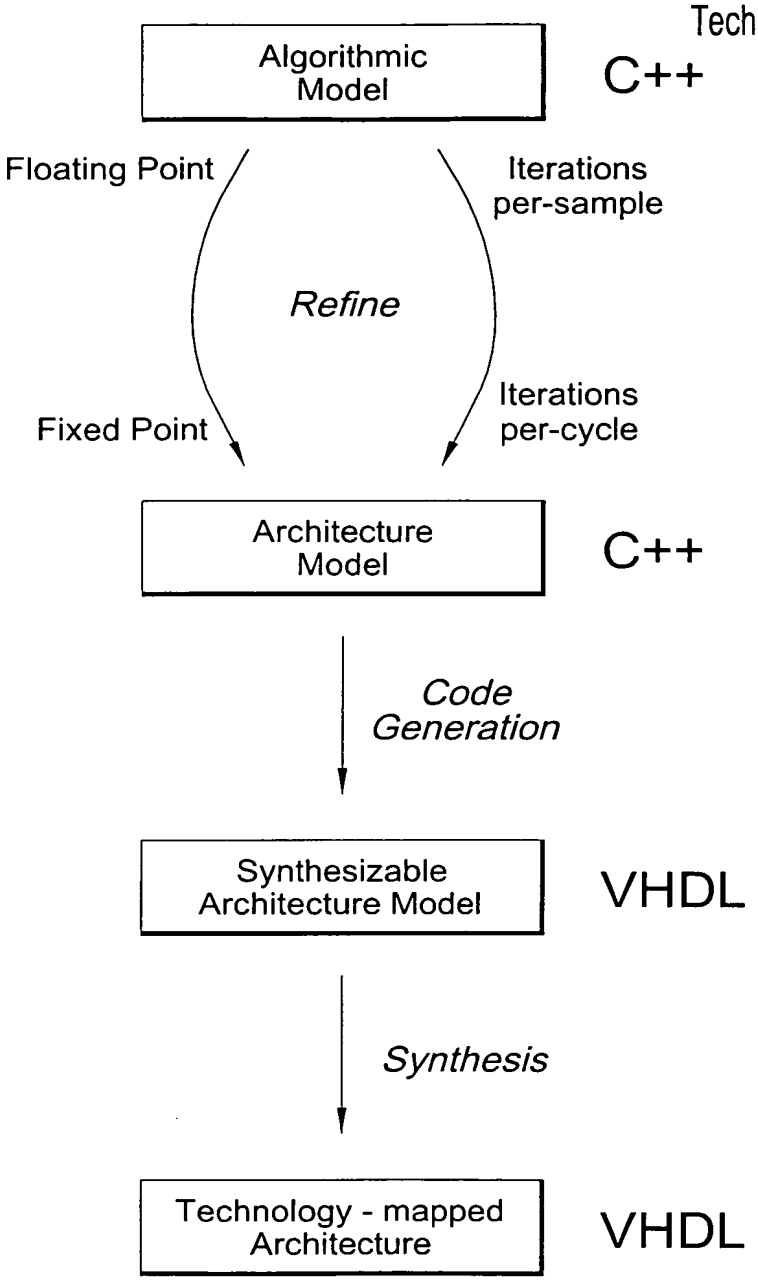


FIG. 1C

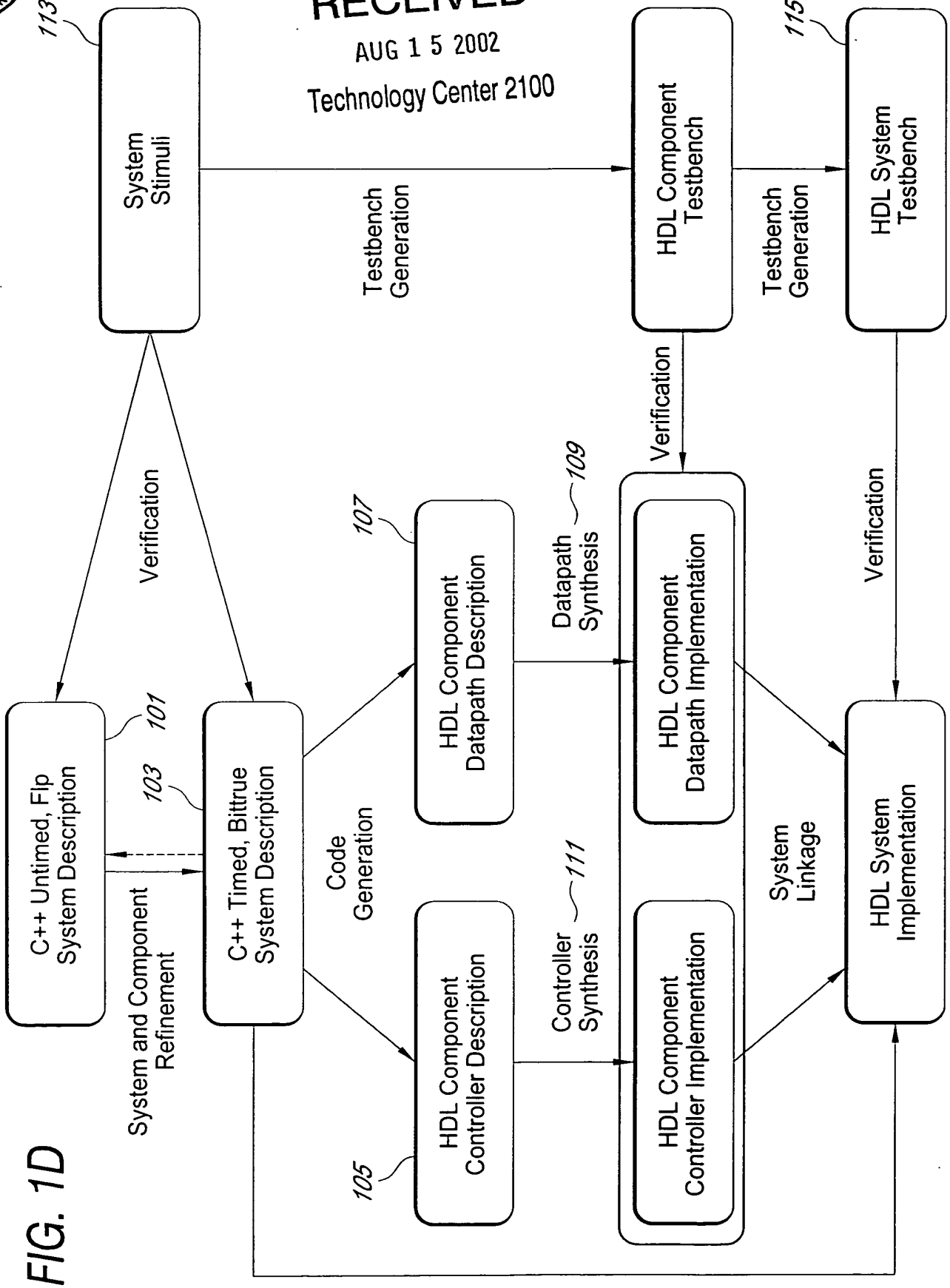


FIG. 1D

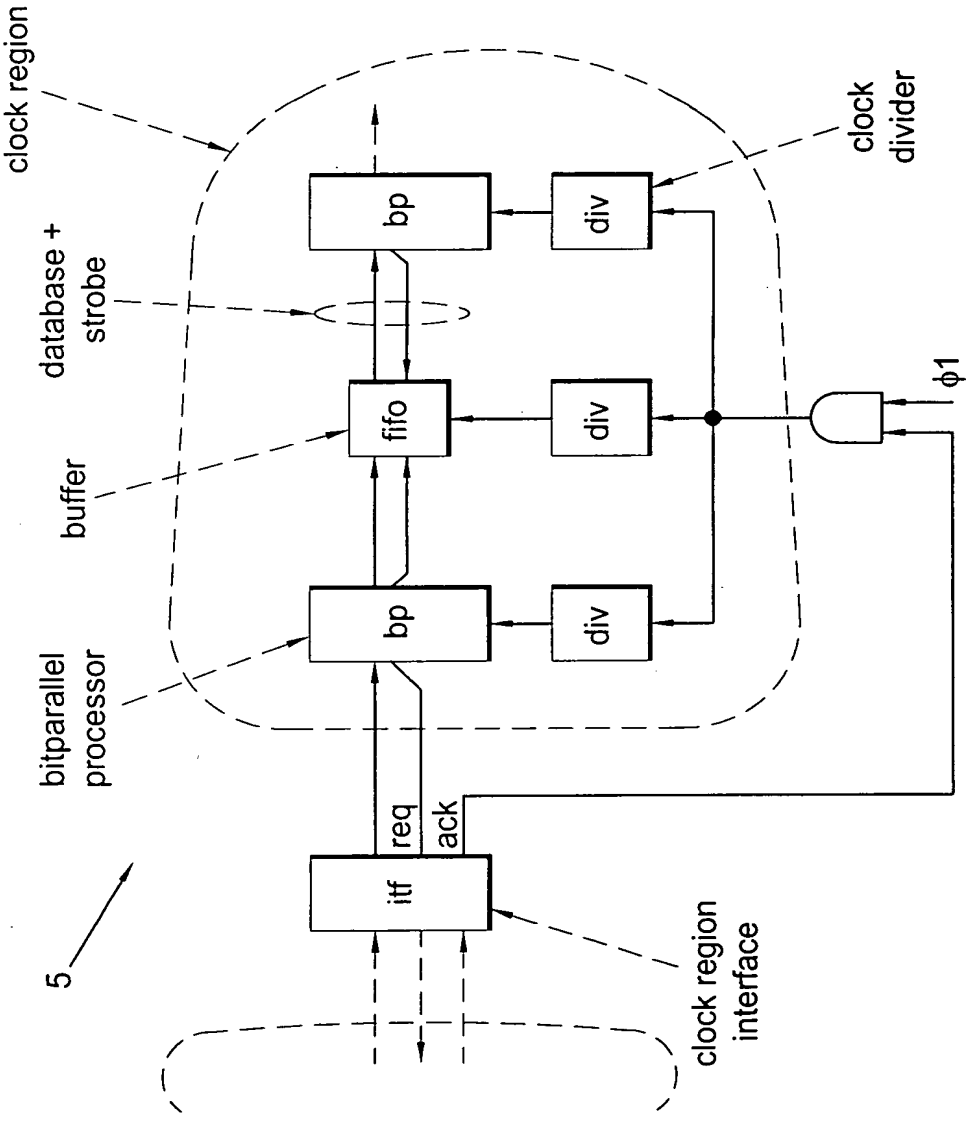


FIG. 2

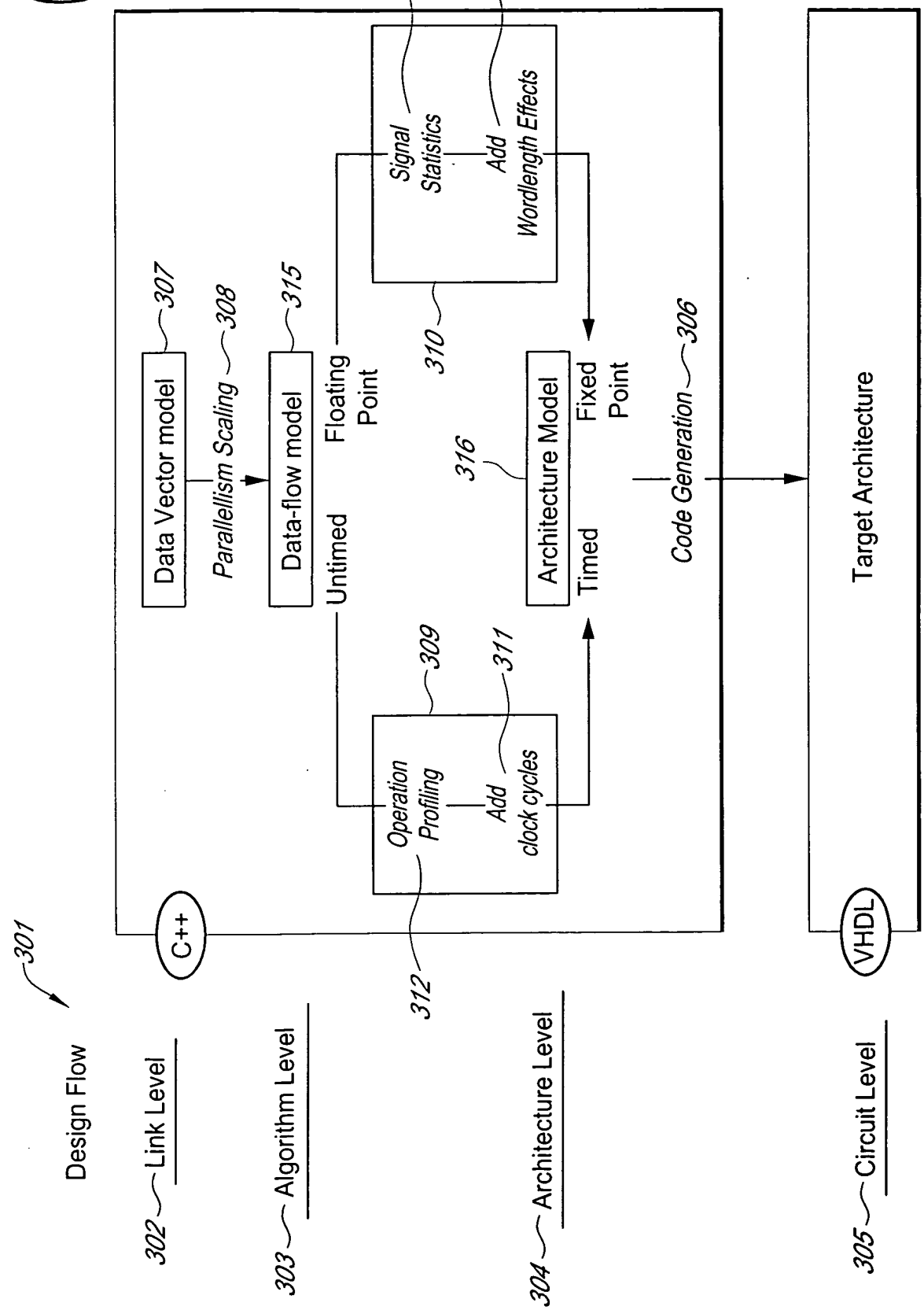


FIG. 3

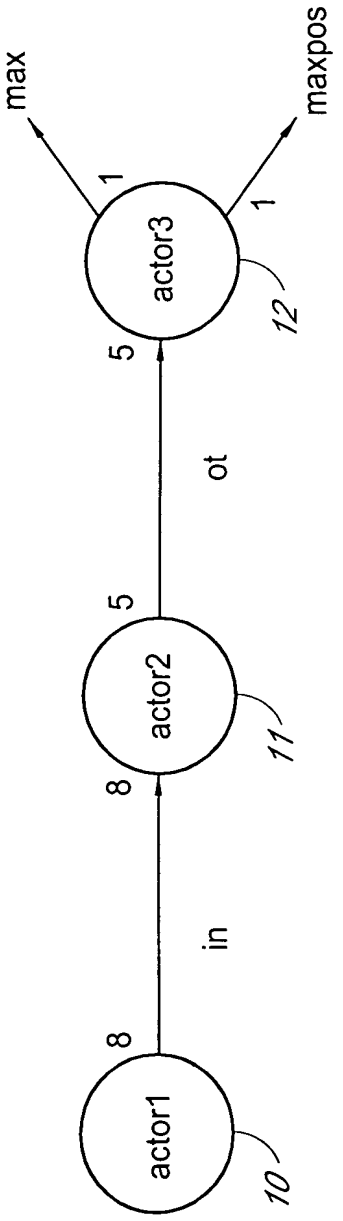


FIG. 4

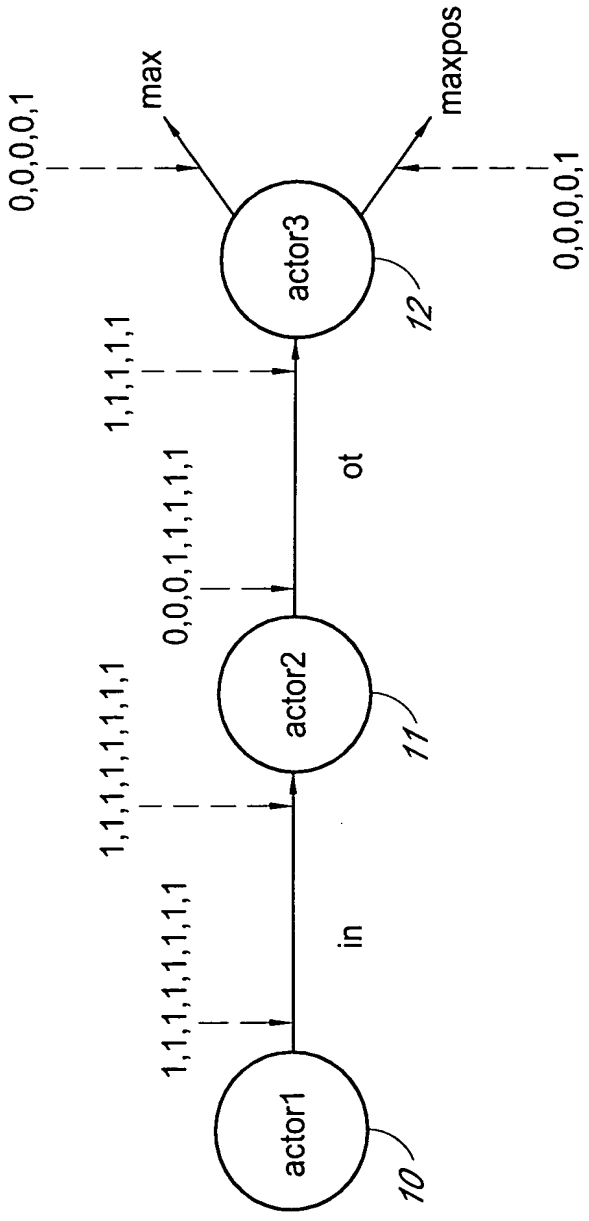


FIG. 5

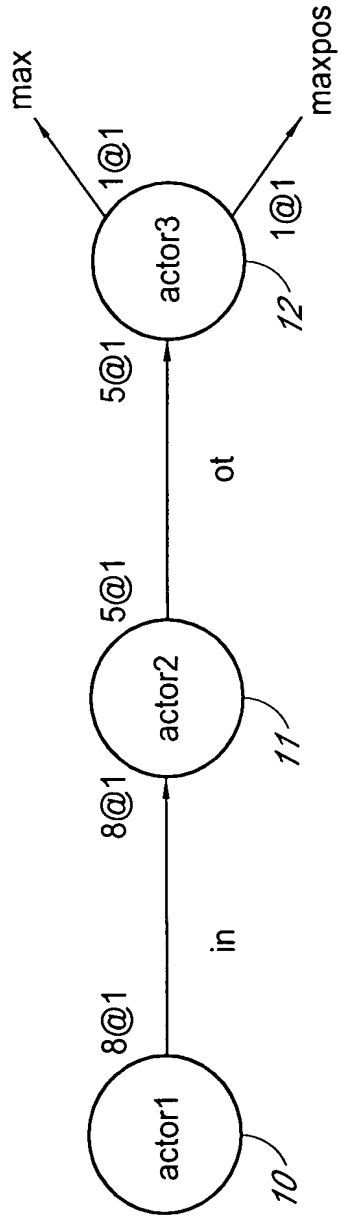


FIG. 6

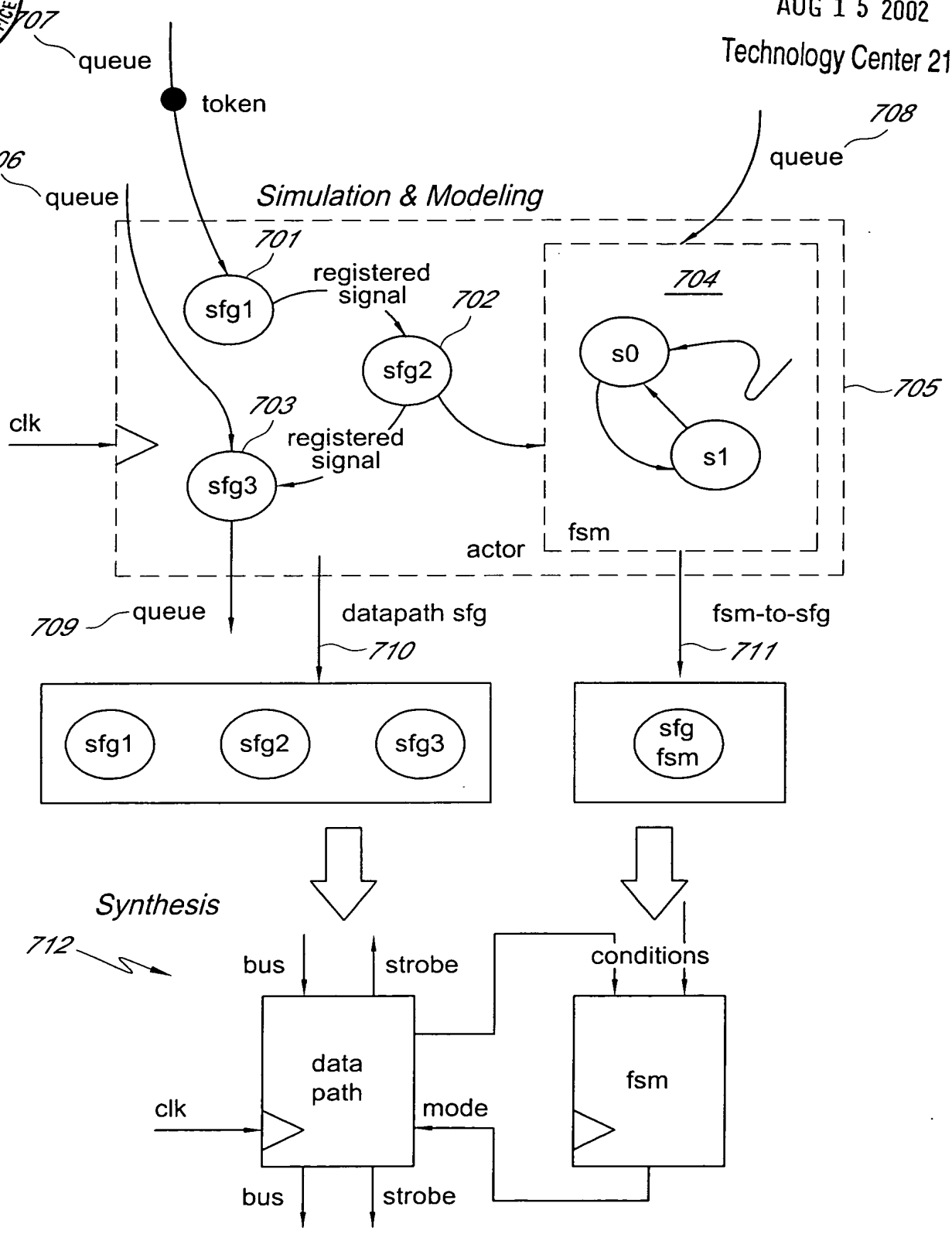


FIG. 7

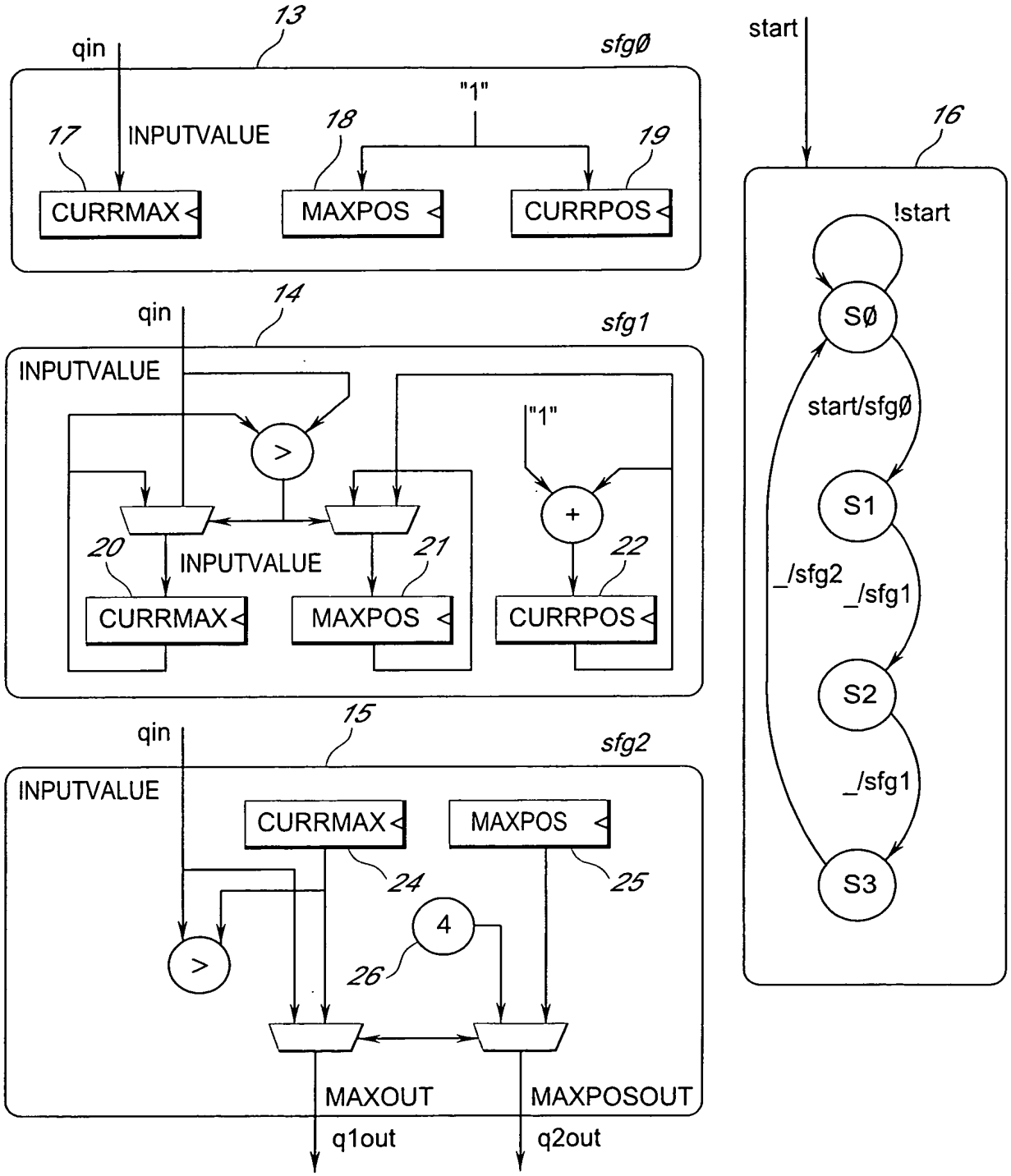


FIG. 8

FIG. 9A

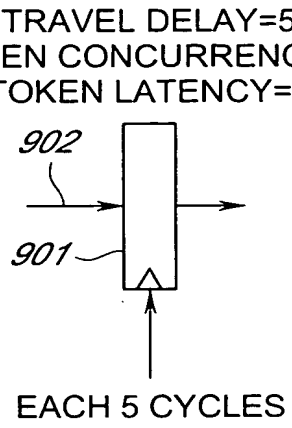


FIG. 9B

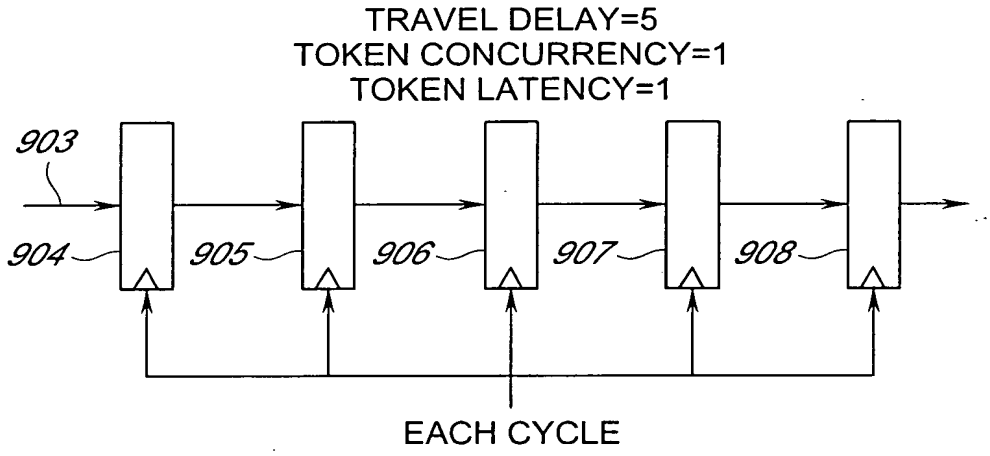
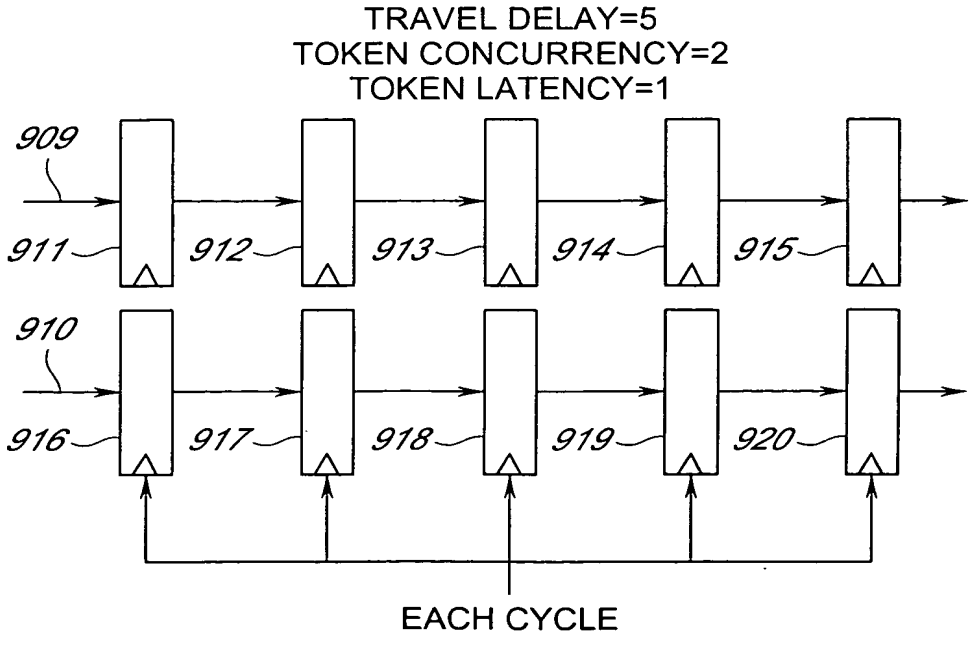


FIG. 9C



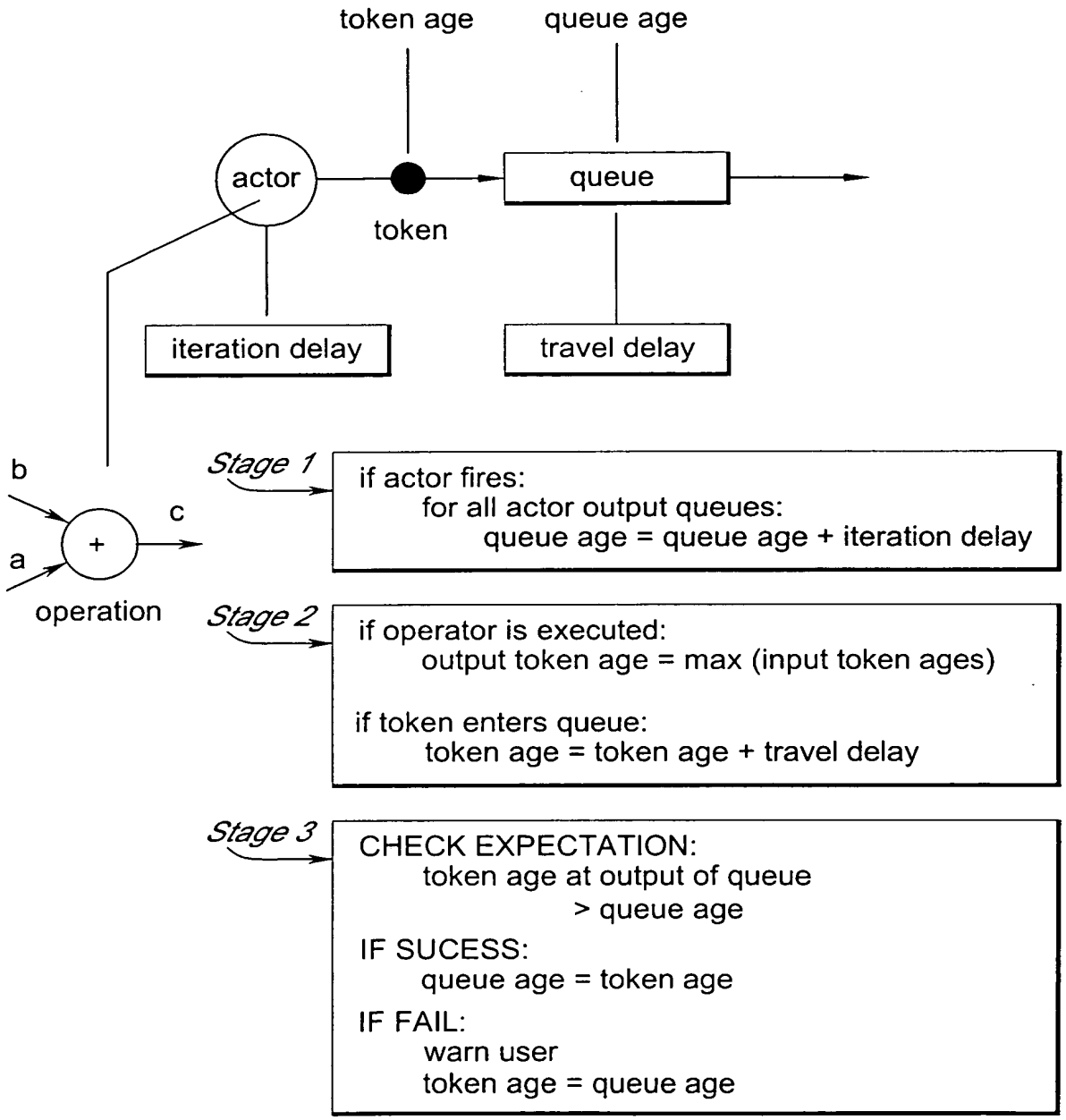


FIG. 10

```
dfix T_sample(8, 6);
dfix T_acc  (8, 6);
dfix T-bit  (1, 0, ns);
double hardwired_coef = { 0.5, 0.2, -0.3, 0.15 };

fsm correlator: :define(clk & _ck)
{

   sig_array  coef        (4,  ck,  T_sample);
   sig_array  sample      (4,  ck,  T_sample);
   sig        accu        (ck,  T_accu       );
   sig        sample_in   (T_sample          );
   sig        coef_in     (T_sample          );
   sig        corr_out    (T_sample          );
   sig        load        (ck, T_bit         );
   sig        load_ctr    (T_bit             );

   sfg initialize_coefs;
   for (i = 0;  i < 4; i++)
      coef[i] = W(T_sample, hardwired_coef[i] );

   sfg load_coef_0;
   input(coef_in);
   coef[0] = in_coef_in;

   sfg correl_1;
   accu   = cast(T_acc, coef[0] * sample[0] + coef[1] * sample[1]);

   sfg correl_2;
   corr   = accu + cast(T_acc,  coef[2] * sample[2] + coef[3] * sample[3] );
   output(corr);

   sfg read_sample;
   input(sample_in);
   for (i = 3; i >=0; i--)
      if (i)
        sample[i] = sample[i-1];
      else
        sample[i] = sample_in;

   sfg read_control;
   input(load_ctr);
   load = load_ctr;

   fsm myfsm;
   initial rst;
   state phase_1
   state phase_2
   rst       <<  always      <<  initialize_coefs    <<  phase1;
   phase1    <<  always      <<  read_control
                                 <<  correl_1        <<  phase2;
   phase2    <<  !cnd(load)  <<  correl_2
                                 <<  read_sample     <<  phase1;
   phase2    <<   cnd(load)  <<  correl_2
                                 <<  read_sample
                                 <<  load_coef_0     <<  phase1;
   return mysfm;
}
```

FIG. 11

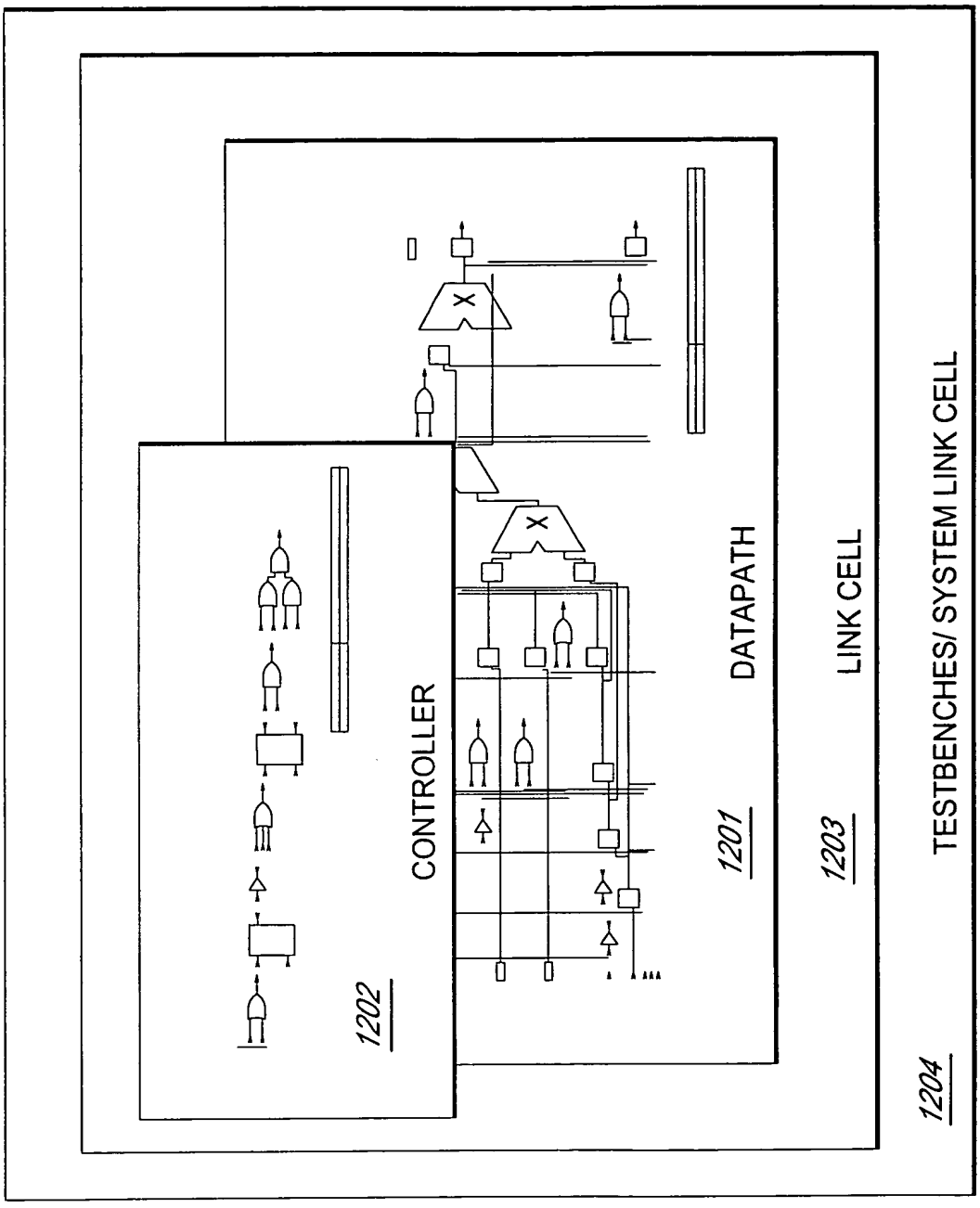


FIG. 12

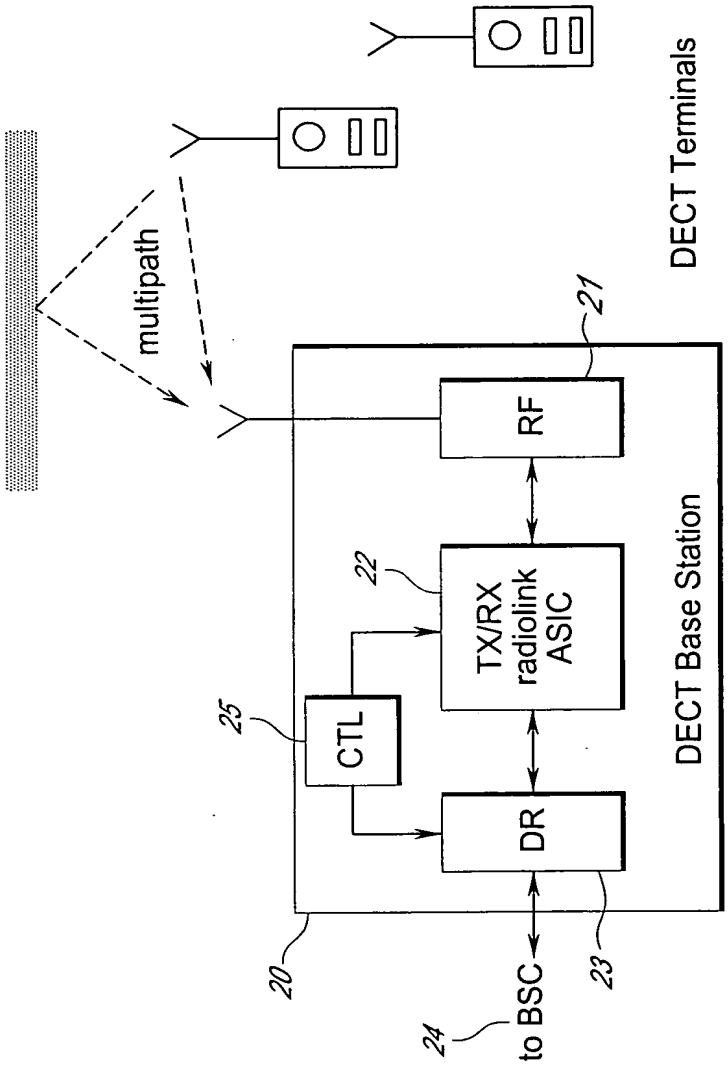


FIG. 13

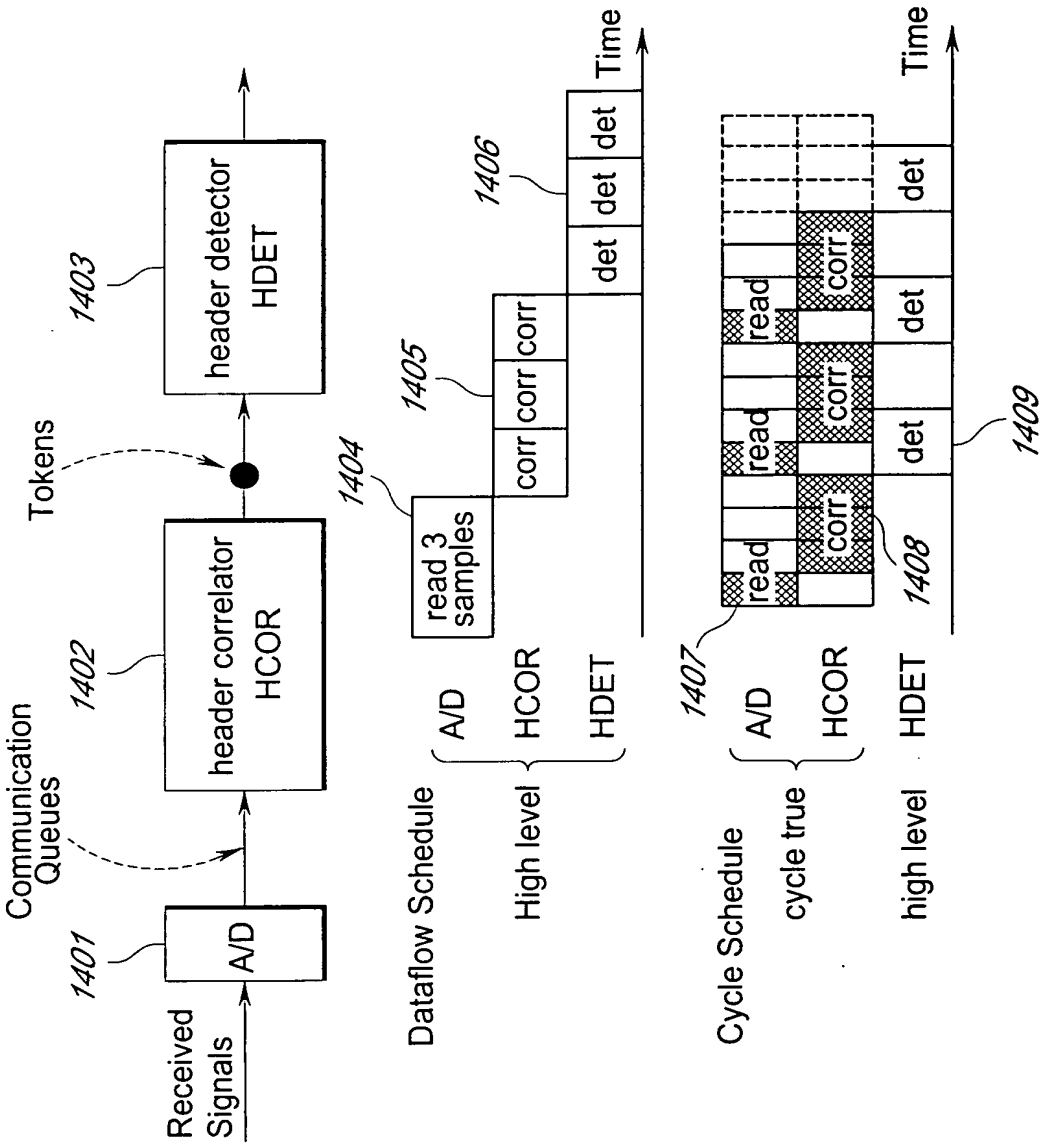


FIG. 14

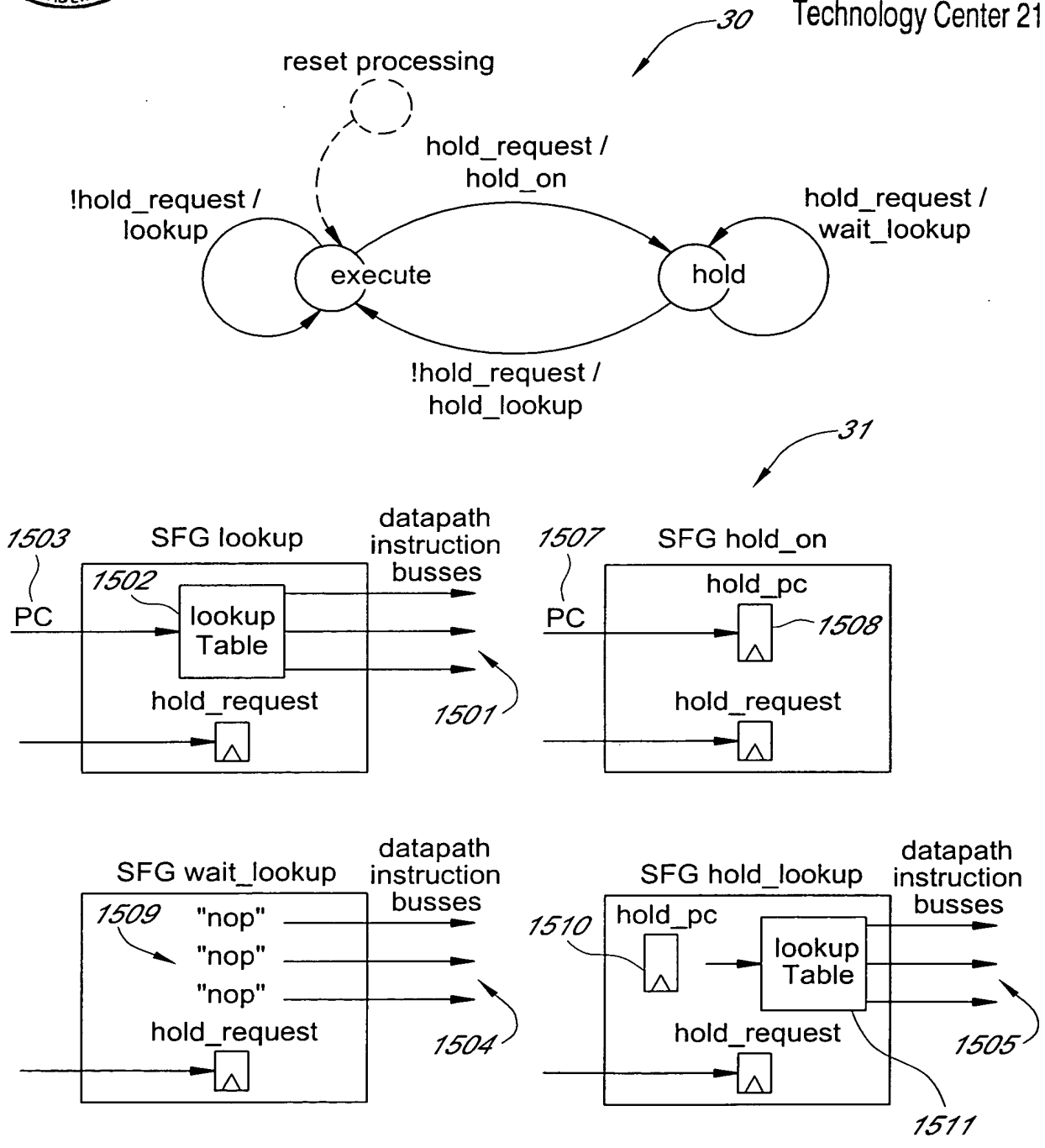


FIG. 15

Sig Class

```
class sig {
   Value value;
   char   *name;
public:
   sig(value v);
   sig operator + (sig v);
   virtual Value simulate ();
   virtual void gen_code (ostream &os);
};

sig sig: :operator + (sig v) {
   sigadd s;
   add.left  =  &v;
   add.right  = this;
   return add;
}

Value sig: :simulate() {
   return value;
}

sig: :gen_code (ostream &os) {
   os << name;
}
```

Derived Operator Class

```
class sigadd  :  public  sig  {
   sig  *left;
   sig    *right;
public:
   Value simulate();
    void gen_code (ostream &os);
};

Value sigadd: :simulate() {
   return  left->eval()  +
              right->eval();
}

sigadd: :gen_code (ostream & os) {
   os  <<  left->cg()
   <<  " + "
   <<  right->cg();
}
```

FIG. 16

```
sig a, b, c, d;
b = a + 3;
d = (b + c) << 3;
```

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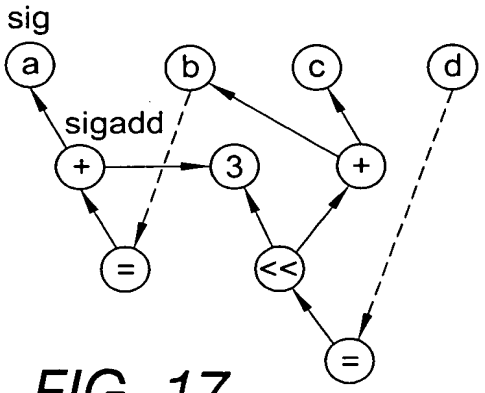

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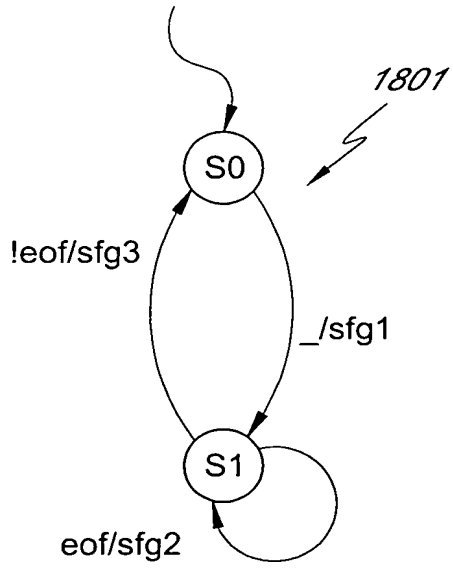
FIG. 17



1802

```
fsm f;
initial s0;
state s1;

s0 << allways          << sfg1 << s1;
s1 << cnd(eof)         << sfg2 << s1;
s1 << !cnd(eof)        << sfg3 << s0;
```

FIG. 18

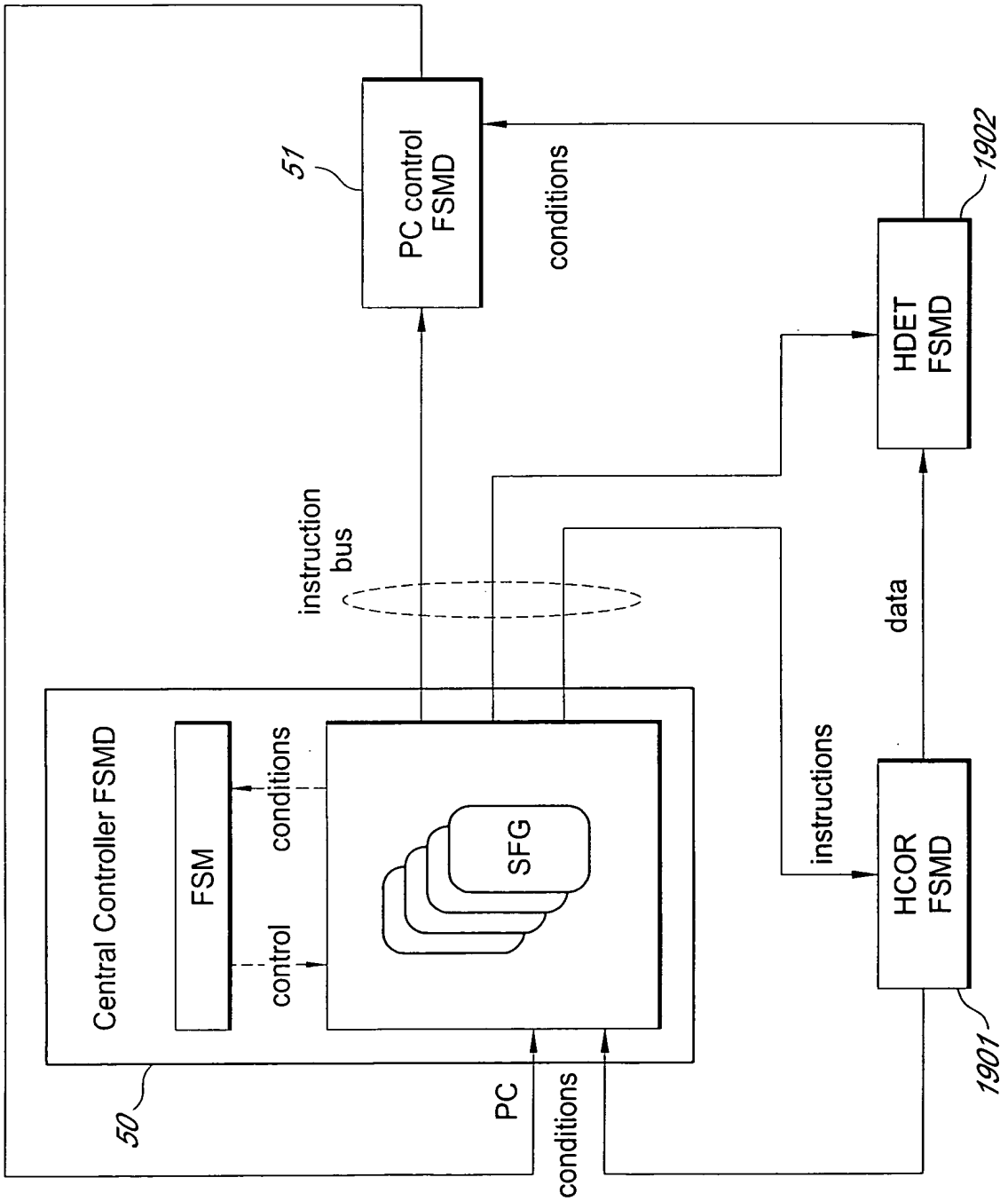


FIG. 19

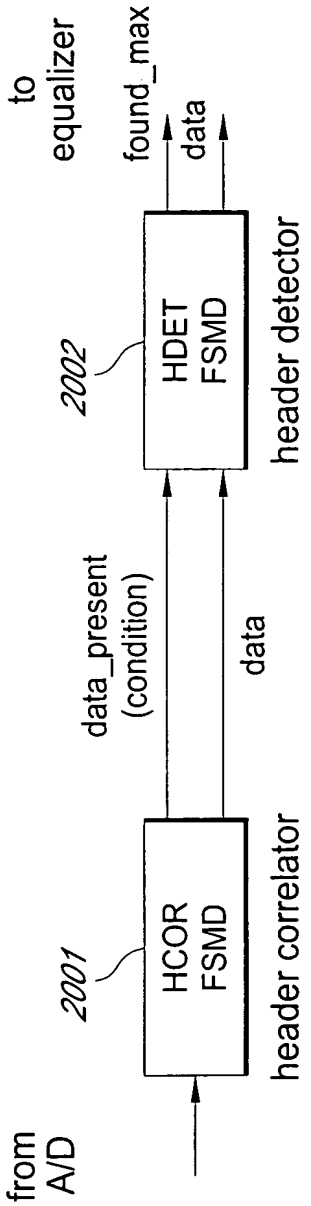


FIG. 20

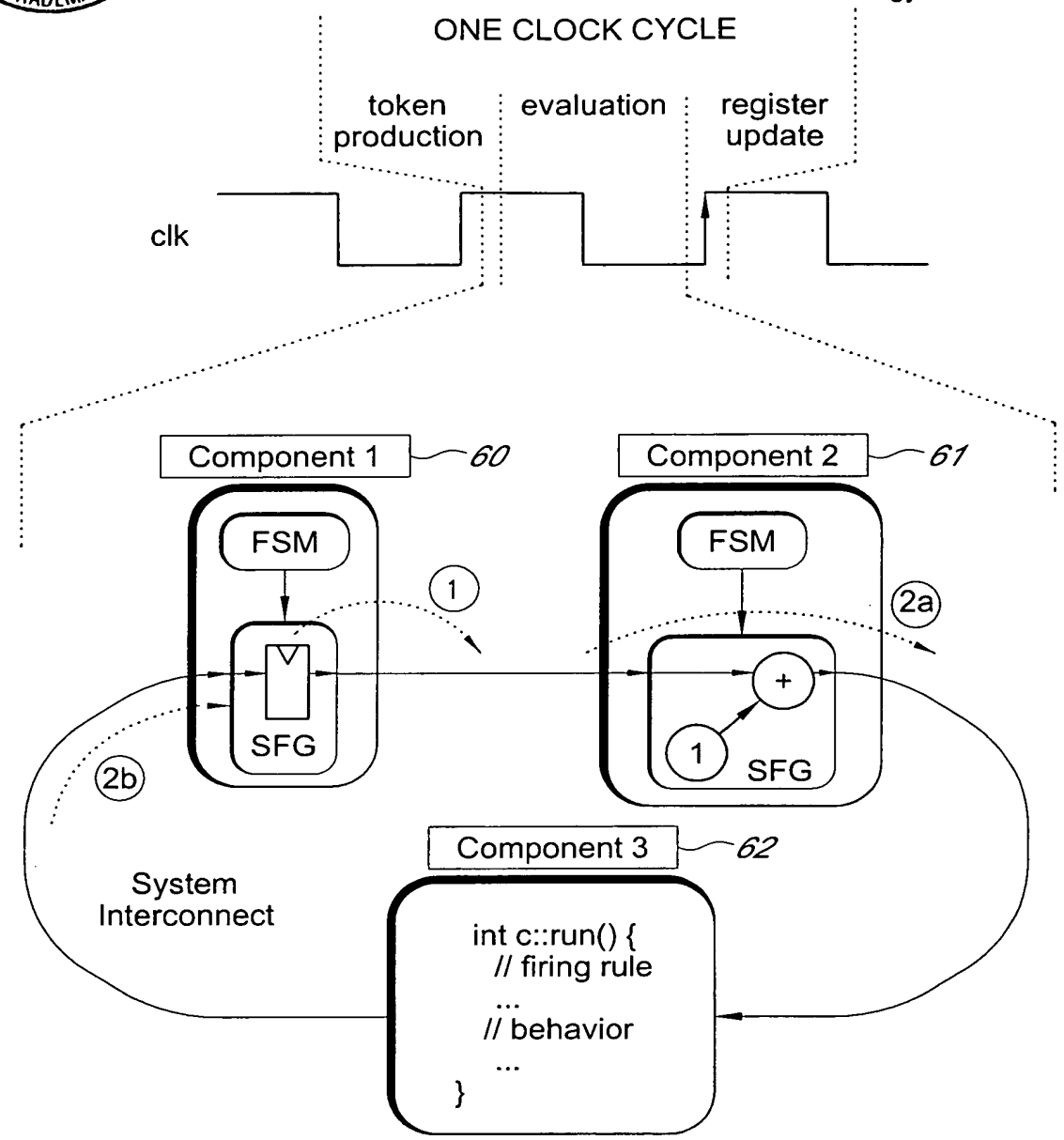


FIG. 21

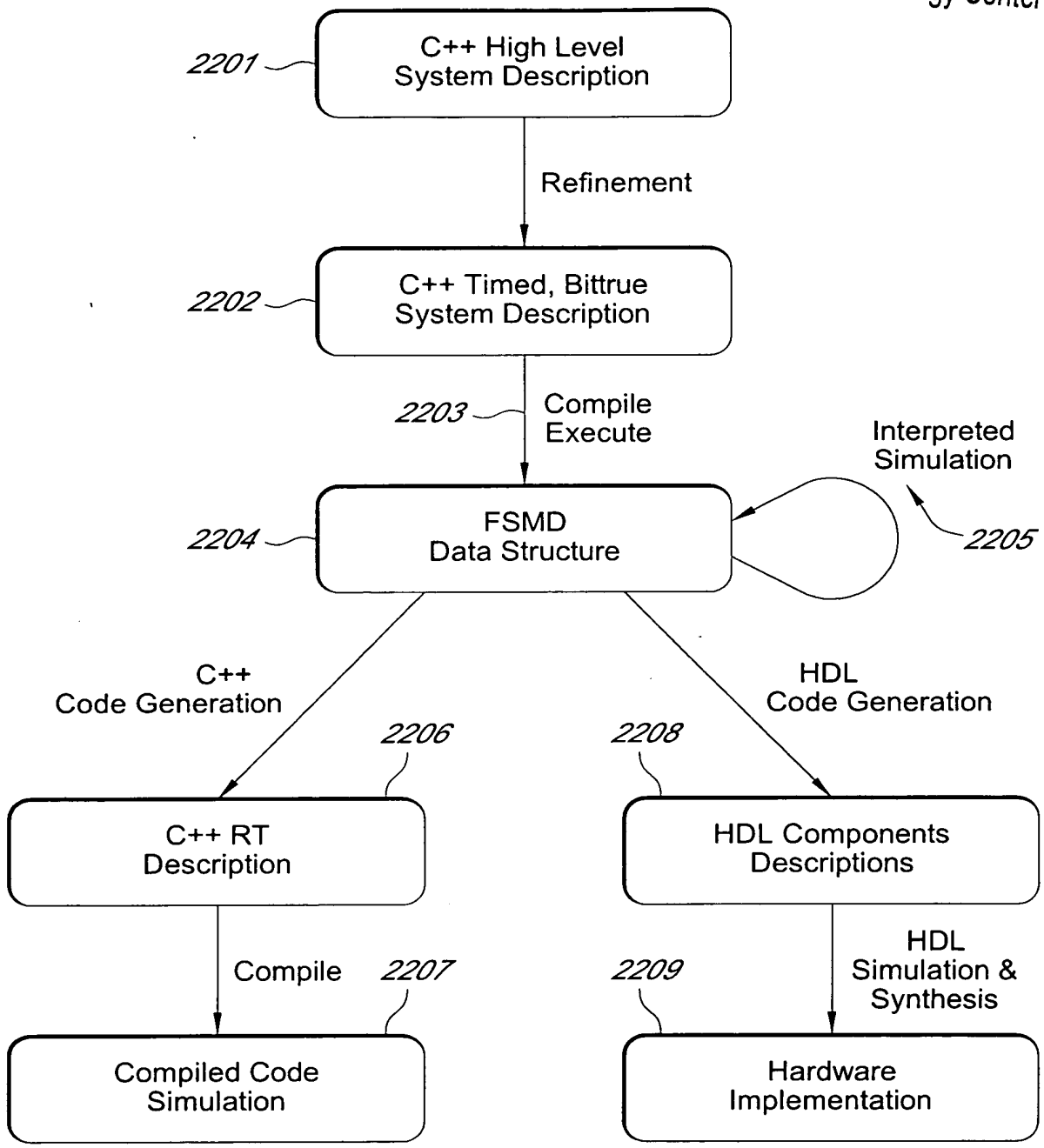


FIG. 22

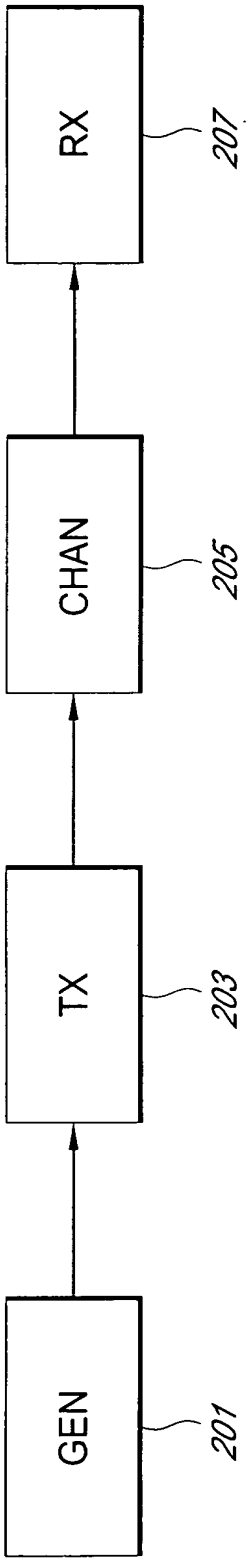


FIG. 23

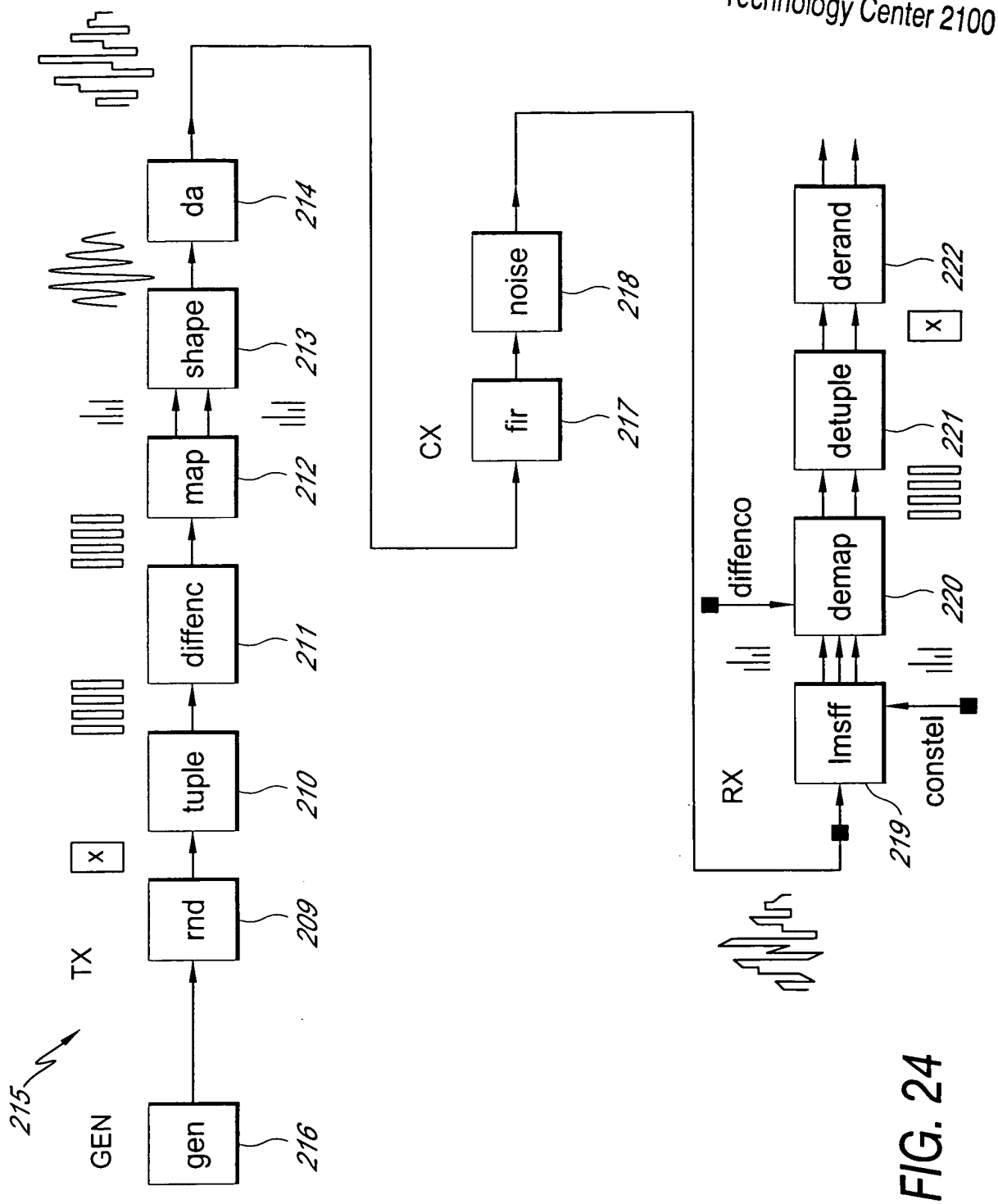


FIG. 24